

1. A **transmitter** for transmitting in a network comprising the transmitter and at least one receiver wherein the transmitter is arranged to synchronise to a common time reference having distinguishable instances, comprising:  
means for reading a real time clock at an identified instance of the common  
5 time reference; and  
means for transmitting an identification of the real time clock value for a first instance and an identification of the first instance.

2. A transmitter as claimed in claim 1 further comprising means for calculating  
10 the real time clock value at the first instance by adding the time difference between the first instance and the identified instance to the real time clock value at the identified instance to obtain the real time clock value for the first instance.

3. A transmitter as claimed in claim 1 wherein the first instance is in the past at the moment of transmission.

4. A transmitter as claimed in claim 1 wherein the first instance is in the future at the moment of transmission.

5. A transmitter as claimed in claim 1 wherein the identified instance and the first instance are one and the same.

6. A transmitter as claimed in claim 1 further comprising a synchronisation  
25 controller for maintaining the common time reference.

7. A transmitter as claimed in claim 1, arranged to communicate in accordance with the Bluetooth Standard, wherein Link Level synchronisation provides the common time reference.

8. A transmitter as claimed in claim 1, arranged to communicate in accordance with the Bluetooth Standard, wherein the identification of the real time clock value and the identification of the first instance are transmitted as a Link Manager Message.

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9. A transmitter as claimed in claim 1, arranged to communicate in accordance with the Bluetooth Standard, wherein the instances of the common time reference are synchronous with the frequency hopping of the network.

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10. A transmitter as claimed in claim 1 wherein the first instance is identified by using a frame/slot number.

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11. A transmitter as claimed in claim 10 wherein the occurrence of the instance within the identified slot/frame is predetermined.

12. A transmitter as claimed in claim 11 wherein occurrence of the instance within the identified slot/frame is determined by the transmission of a message.

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13. A transmitter as claimed in claim 1 further comprising an interface for connection to a Real Time Clock or Real Time application.

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14. A transmitter as claimed in claim 1 arranged for asynchronous transmission of the identification of the real clock value and of the identification of the first instance.

15. A media device such as a speaker, microphone, screen, camera or computer comprising a transmitter as claimed in claim 1.

16. A **receiver** for receiving in a network comprising at least the receiver and a transmitter wherein the receiver is arranged to synchronise to a common time reference having distinguishable instances comprising:

means for receiving a transmitted identification of a real time clock value and  
5 an identification of a first instance;

and means for determining a real time clock value, current at a second instance from the received identification of a real time clock value and the received identification of a first instance.

10 17. A receiver as claimed in claim 16, wherein the real time clock value is the received value, if necessary, corrected in accordance with the time difference between the first and second instances.

15 18. A receiver as claimed in claim 16, wherein the first instance is in the past at the moment of reception.

20 19. A receiver as claimed in claim 16, wherein the real time clock value determination is by calculation in which the time difference between the second and first instances is added to the received value of the real time clock.

20. A receiver as claimed in claim 16, wherein the first instance is in the future at the moment of reception.

25 21. A receiver as claimed in claim 16, wherein the means for determining determines that the current real time clock value is the received value when the second instance of the common time reference occurs, the second and first instances being one and the same.

30 22. A receiver as claimed in any one of claims 16, further comprising a synchronisation controller for maintaining the common time reference.

23. A receiver as claimed in claim 22 wherein the synchronisation controller comprises correlation means for identifying access codes preceding the payload of data packets.

5 24. A receiver as claimed in claim 23 wherein the synchronisation to the common time reference is updated as each packet is received .

25. A receiver as claimed in claim 22, wherein the synchronisation controller provides bit- level synchronisation of the common time reference.

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26. A receiver as claimed in claim 16, arranged to communicate in accordance with the Bluetooth Standard, wherein Link Level synchronisation provides the common time reference.

15 27. A receiver as claimed in claim 16, arranged to communicate in accordance with the Bluetooth Standard, wherein the identification of the real time clock value and the identification of the first instance are transmitted as a Link Manager Message.

20 28. A receiver as claimed in claim 16, arranged to communicate in accordance with the Bluetooth Standard, wherein the first instance is identified by using a frame/slot number.

25 29. A receiver as claimed in claim 28 wherein the occurrence of the instance within the identified slot/frame is predetermined.

30. A receiver as claimed in claim 28 wherein occurrence of the instance within the identified slot/frame is determined by the reception of a message.

30 31. A receiver as claimed in claim 16, further comprising an interface for connection to a Real Time Clock or Real Time application.



and means for determining, a distal real time clock value current at a local second instance by adding the time difference between the received distal first instance and the second local instance to the received distal real time clock value.

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36. A **transceiver** for operating in a network wherein the transceiver is arranged to synchronise to a time reference common to the network having distinguishable instances comprising:

means for reading a local real time clock at an identified local instance of the common time reference; and

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means for calculating the local real time clock value at a first local instance by adding the time difference between the first local instance and the identified local instance to the local real time clock value at the identified instance to obtain the local real time clock value for the first instance and

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means for transmitting an identification of the local real time clock value of a first instance and an identification of the local first instance; and additionally comprising

means for receiving a transmitted identification of a distal real time clock value and an identification of a distal instance;

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and means for determining that the current distal real time clock value is the received distal real time clock value when the distal instance of the common time reference occurs locally.

37. A **transceiver** for operating in a network wherein the transceiver is arranged to synchronise to a time reference common to the network having distinguishable instances comprising:

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means for reading or writing a real time clock at an identified instance of the common time reference;

means for transmitting an identification of the real time clock value of a first instance and an identification of the first instance; and additionally comprising

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means for receiving a transmitted identification of a real time clock value and an identification of a first instance.

38. A **method** of providing real time clock information from a transmitter device to a receiver device  
 5 comprising :  
 synchronising the transmitter device to a time reference having distinguishable instances shared in common with the transmitter and receiver  
 obtaining a real time clock value at an identified instance of the common time  
 10 reference and  
 transmitting an identification of the real time clock value for a first instance and an identification of the first instance.

39. A **method** of receiving real time clock information transmitted from a transmitter device to a receiver device  
 15 comprising :  
 synchronising the receiver device to a time reference having distinguishable instances shared in common with the transmitter and receiver;  
 receiving a transmitted identification of a real time clock value and an  
 20 identification of a first instance of the common reference; and  
 determining a real time clock value current at a second instance of the common time reference, corresponding to the received real time clock value corrected in accordance with the time difference between the first and second instances, if any.

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 40. A **network** comprising a transmitter device and at least one receiver device wherein the transmitter and receiver are synchronised to a common time reference having distinguishable instances such that when an instance is measurable at one device there is simultaneously an identifiably  
 30 corresponding instance measurable at the other device, the transmitter comprising:

means for reading a real time clock at an identified instance of the common time reference; and

means for transmitting an identification of the real time clock value for a first instance and an identification of the first instance,

5 and the receiver comprising:

means for receiving the transmitted identification of the real time clock value at the first instance and the identification of the first instance;

and means for determining, at a second instance, a current real time clock value .

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